

# Attack<sup>®</sup>

**HEAT TECHNOLOGY PRODUCER**

## **BOILER PREFERENCES**

- *Modern design*
- *Burning of soft and hard wood in big combustion chamber of 105, 145, 185, 350 l*
- *High combustion efficiency - low consumption of fuel*
- *Minimum quantity of waste*
- *Easy attendance and simple cleaning*
- *Automatic shutdown of the boiler after fuel burn out*
- *Suction fan assures balanced and effective combustion*
- *Possibility of big wood logs firing*
- *Equipped with cool down circuit against water overheating in boiler*



## **WOOD GASIFYING BOILER**

# **ATTACK DP**

Wood gasifying ATTACK DP STANDARD and PROFI boilers are designed for economic and ecological heating of family houses, bungalows, small plants, workshops and similar objects. Specified fuel for ATTACK DP boilers is dry wood. At full utilization of the feeding hopper there is a possibility of continuous firing from 8 till 12 hours.

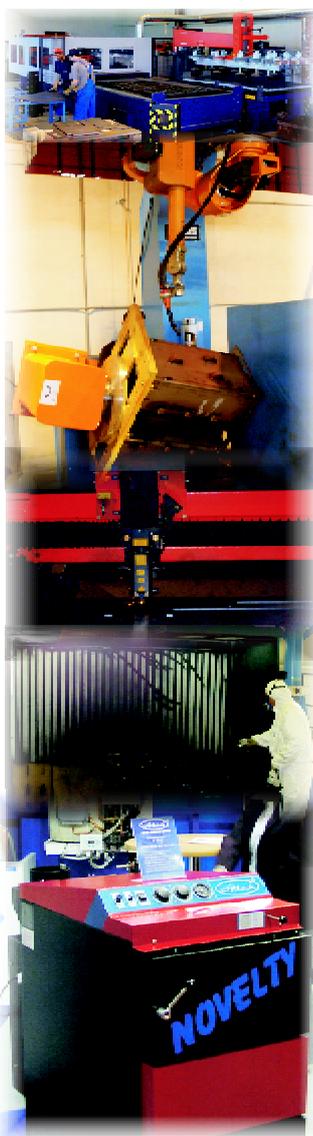
# WOOD GASIFYING BOILERS - ATTACK DP

## ATTACK DP

Wood gasifying boiler ATTACK DP is a modern boiler that with its technology gets maximum from wood and by ecological combustion saves environment.

Wood is favourite fuel as it produces comfortable warmth and grows right outside your door.

**TRADITIONAL FUEL -  
- THE MOST  
MODERN APPLIANCE**



## BOILER CHARACTERISTICS

Ecological warmwater boilers ATTACK DP are assigned for heating of family houses and industrial buildings. The boilers are designed for log wood firing. There is a possibility to use any kind of dry wood, e.g. wood logs in the length depending on the type of boiler.

Basis of the ATTACK DP boilers is a water-cooled body. Weldment of a boiler is made of metal steel plates of 6 mm thickness. Heat exchanger is accessible after opening the feeding door, which enables easy cleaning.

Manufacturer carries out the basic setting of the flap for dividing primary and secondary air. Primary air is supplied to the boiler hopper, secondary air to the combustion jet.

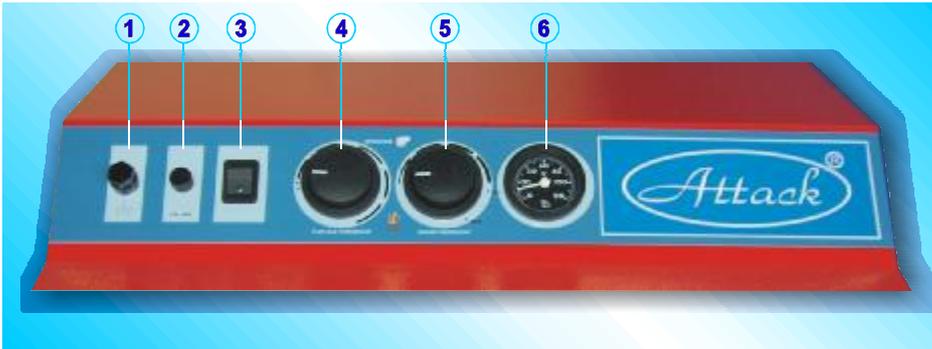
Wood gasifying with following combustion of wood gas in the firing chamber insures an optimum firing of all combustible materials. Combustion process is controlled by a suction ventilator. The boiler body is isolated with a 40 mm thick mineral fleece and design of boiler is formed by a jacket painted with powder paint.

Wood gasifying boiler ATTACK DP is equipped with two types of regulation:

## MODIFICATION OF ATTACK DP BOILERS

### ● ATTACK DP STANDARD

Wood gasifying boiler ATTACK DP Standard by a boiler and flue gas thermostat.



- 1 - Reset
- 2 - Fuse
- 3 - Main switch
- 4 - Flue gas thermostat
- 5 - Boiler thermostat
- 6 - Thermometer

#### Description

1. Reset - protection of the boiler against overheating (in case the temperature is higher than 110°C., the boiler is disconnected from the power net)
  2. Fuse - protection of the boiler against short circuit
  3. Main switch - switching on of the boiler, switching off if necessary
  4. Flue gas thermostat - when the temperature of flue gas decreases under set up value, the fan is switched off
  5. Boiler thermostat - serves for setting up maximum temperature of water in the boiler (after exceeding set up temperature the fan is switched off and the boiler works with minimum output. After decreasing set up temperature the fan is switched off and the boiler works with maximum output)
  6. Thermometer - indicates outlet temperature of water from the boiler
- Pull rod control - serves for opening and closing of fuel cut off flap

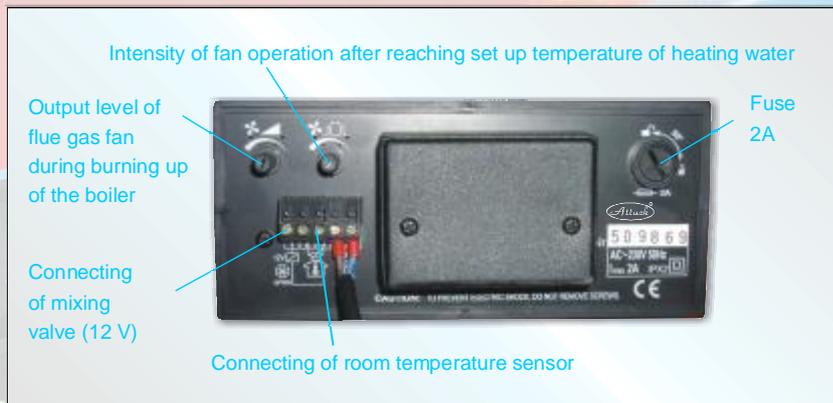
### ● ATTACK DP PROFI

Wood gasifying boiler ATTACK DP Profi is controlled by electronic regulator that serves for regulation of the temperature of wood gasifying boilers. The advantage of the Profi type of ATTACK DP boilers against the Standard version is in higher comfort of service and modulation of boiler output to reach the most optimal parameters for wood combustion. The regulator measures the temperature of water in the boiler and displays its value while controlling the flue gas ventilator and the pump of central heating.



- 1 - Main switch
- 2 - Display showing the boiler temperature
- 3 - Control light of burning up process
- 4 - Control light of boiler overheating
- 5 - Control light of room thermostat
- 6 - Turning button of boiler thermostat
- 7 - Control light of C.H. pump operation
- 8 - Control light of lack of fuel
- 9 - Turning button of room thermostat
- 10 - TEST button -(by pressing the button the temperature set up by the turning button 6 appears and at the same time flue gas fan switches off for a moment)

#### Backward view of electronic regulator:



## DESCRIPTION OF THE BOILER

The boiler is designed for combustion of wood on the principle of wood gasifying using a flue gas fan sucking flue gas from the boiler.

The boiler consists of two chambers separated by a jet. The body of boiler includes a feed hopper with a heatproof shaped piece that has an oblong opening for transition of flue gas and gas. Under it in the after combustion space there is an ash pan. In the rear part of the boiler there is a vertical flue gas channel with a fuel cut-off flap on the upper part. There is also a suction branch for connection to the flue.

In the front wall in the upper part there is a feeding door and in the bottom part there is an ash door. In the front part of the upper cover there is a pull rod of fuel cut-off. The body of boiler is from the outside insulated by mineral fleece put under the covers of the outside jacket. In the upper part of body there is a control board for electromechanical regulation.

In the rear part there is a channel for inlet of primary and secondary air with a regulation flap, where the ktoromair is heated to a high temperature.

## FUEL

Specified fuel is dry cut wood and logs with min. 12% and max. 20% moisture content and calorific value of 15 - 17 MJ/kg. It is possible to burn big pieces of wooden waste with thick logs.

The boiler is not used for burning sawdust and little wooden waste.



Little wooden waste can be burned only in small amounts with logs (max. 10%)

ATTACK DP boiler with its big feeding hopper removes the most demanding work with wood treatment, which is its cutting to smaller pieces.

The boiler output depends on the moisture content of wood. Output and operation of the boiler is guaranteed for max. moisture content to 20%.

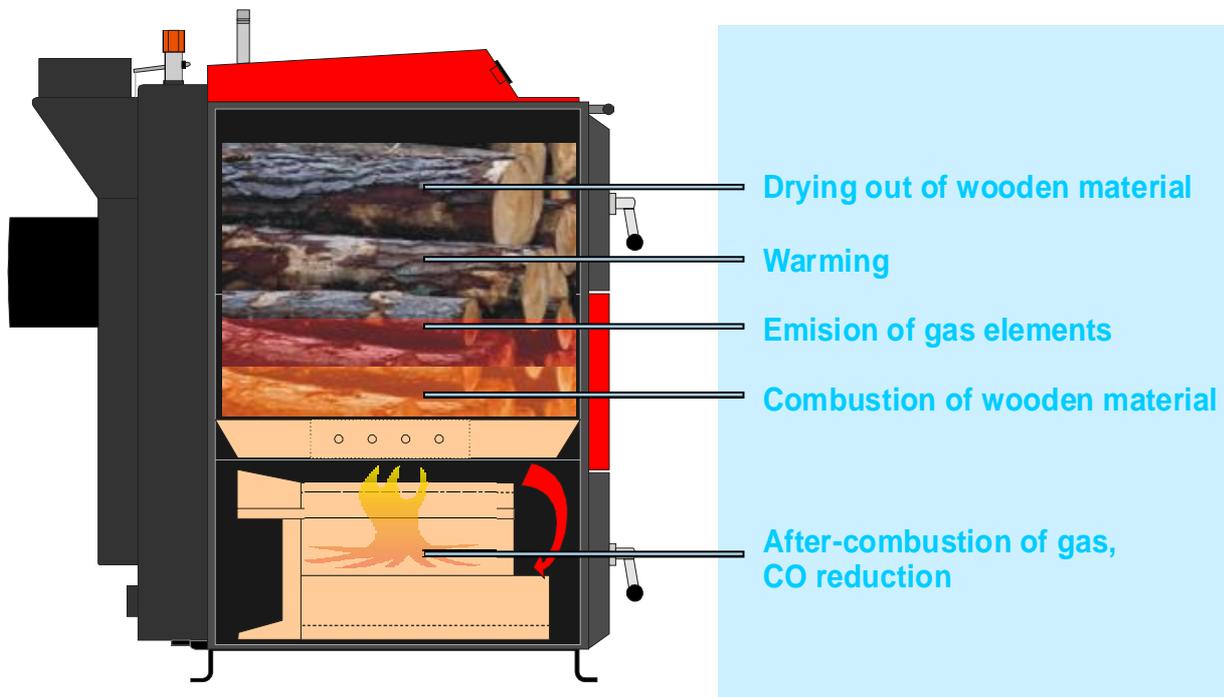


## PYROLYSIS OF WOOD

Wood gasifying is an old technology that enhances efficiency of a thermal appliance. Combustion mean fast oxidation of a material while emitting warmth.

Operation of a pyrolytic boiler can be divided into three phases - warming and drying wooden material in the feed hopper, emission of gas elements and combustion of charcoal.

Each of these phases requires different conditions, but the only regulation for common appliances is to stop air inlet. For some of the processes there is too much air, for other too little, for some the temperature is sufficient, for others it is not. The result of imperfect combustion is that many combustible elements come out of a chimney or react with other products of burning while producing tar.



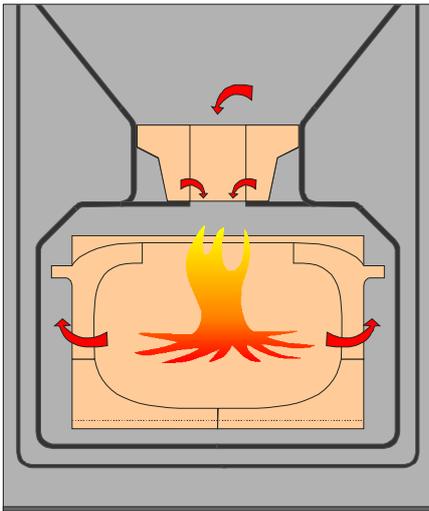
## BOILER FUNCTION

When new fuel is put in, at the temperature under 200°C the wood is dried.

At the temperatures of 200 - 700°C with limited inlet of air the wood is burned, wood gas is emitted and solid elements are produced.



## Section cross boiler-combustion chamber



Emitted gas is driven into the combustion chamber with the access of sufficient amount of air, where it burns and emits warmth.

Charcoal is burned on the grate with sufficient access of air. It reacts with air and emits combustible carbon monoxide which is burned afterwards. Incombustible residues are entrained with the jet into the ash pan.

The advantage of this process is that each combustion phase has optimum conditions in the regulated amount of primary and secondary air as well as in optimum distribution of temperatures for single combustion phases.

Better usage of warmth in wooden material results in lower consumption of fuel and a big range of output regulation while keeping high combustion efficiency offers similar comfort of service as gas boilers.



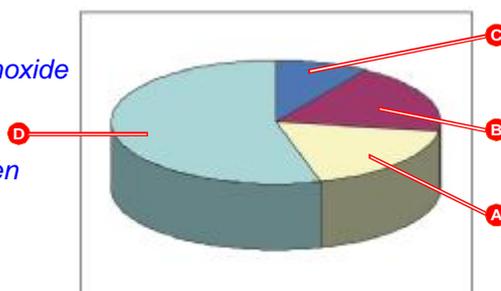
## WOOD - GAS

Under certain conditions (temperature, access of air), wood is disintegrated into gas, liquid and solid elements. Gas element in our case is wood gas, solid one is charcoal which is basically pure carbon. Wood gas is produced by warming wood with minimum access of oxygen, so it is only developed, not combusted.

Fuel efficiency is determined by chemical composition and content of combustible substances. Wood gas contains 20% of hydrogen, 20% of combustible carbon dioxide, 0-10% of methane and 50-60% of incombustible nitrogen. Thanks to high content of inert nitrogen, the fuel efficiency of wood gas is 3,5-8,9 MJ/m<sup>3</sup>.

Wood gas:

- A** - 20% of hydrogen
- B** - 20% of combustible carbon monoxide
- C** - 0-10% of methane
- D** - 50-60% of incombustible nitrogen



## PERMANENT-HEAT OPERATION

Permanent-heat operation means that fire can be kept during the night without heating up daily, but only in winter.

In the boiler prepared like this **burning is kept for more than 12 hours.**

## ELECTROMECHANICAL OUTPUT REGULATION

Output regulation is conducted with a flap on the rear side of the boiler which is controlled by the output regulator. The regulator opens or closes the flap automatically by set up outlet temperature (80-90°C). Pay special attention to setting up the regulator as this, except of regulation, has another important function - **protection of the boiler against overheating.**



### OUTPUT REGULATOR



It is a thermoregulator of combustion air for regulation of thermal appliances for solid fuel as is a wood- gasifying ATTACK DP boiler. Metal construction and a composition head ensure resistance against high temperatures and mechanical damage. Thermostatic element from a top world producer guarantees high accuracy and long life of the regulator. The regulator has a standard lever of 120x145 mm, 120°bend, regulation range of 30°-90°C and

maximum load of the chain of 0,8 kg. The regulator keeps temperature of heated water at the set level with the help of a set button.

## PROTECTION OF BOILER AGAINST CORROSION

Suitable solution of this problem is using mixing appliance (Regumat Attack-Oventrop), or a thermoregulation mixing valve. Both the ways enable separation of boiler circuit and heating circuit. This way you can prevent undercooling of boiler under 65°C and thus decrease condensation of steam, acids and tars in the feed hopper. The Regumat mixing appliance keeps constant temperature of return heating water coming to the boiler in 65°C with thermostatic head set up to level 5-6. With a flap of the thermoregulation mixing valve it is possible to regulate the temperature of heating water independently on the temperature of water in the boiler. Water in the boiler must be permanently of 80-90°C.



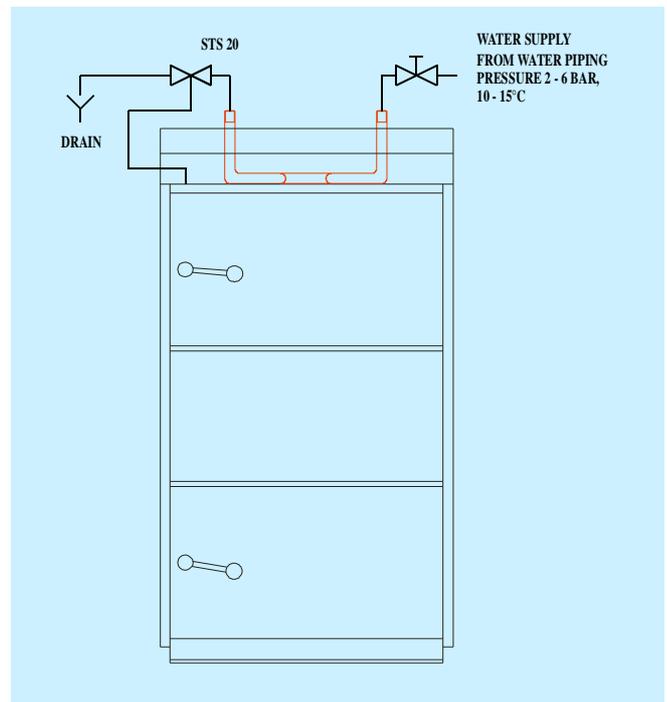
## PROTECTION OF THE BOILER OVERHEATING

STS 20 valve, which has a sensor placed in the rear part of the boiler, protects the boiler against overheating. If the temperature of water in the boiler overcomes 95°C, the valve lets water into a cooling circuit which overtakes excessing heat and discharges it into the drain.

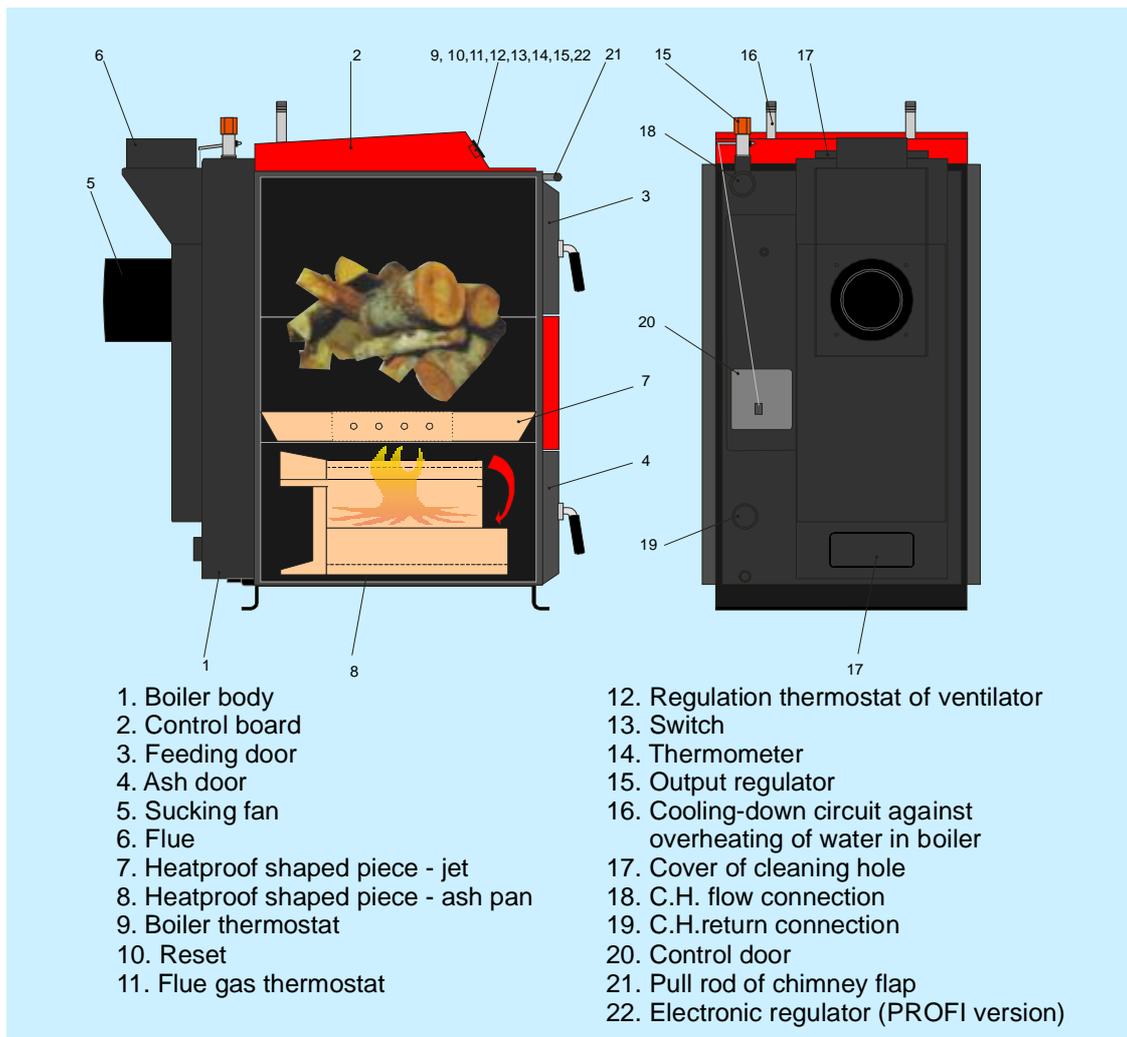


## INSTALLATION

ATTACK DP boilers have minimum dimensions and low weight which enables a simple installation. Boilers must not be installed in dwelling rooms but in separated, directly ventilated rooms. When installed, it is possible to change the way of opening of feeding and ash doors from left side to the right one and vice versa.



## DESCRIPTION OF ATTACK DP BOILER



1. Boiler body
2. Control board
3. Feeding door
4. Ash door
5. Sucking fan
6. Flue
7. Heatproof shaped piece - jet
8. Heatproof shaped piece - ash pan
9. Boiler thermostat
10. Reset
11. Flue gas thermostat
12. Regulation thermostat of ventilator
13. Switch
14. Thermometer
15. Output regulator
16. Cooling-down circuit against overheating of water in boiler
17. Cover of cleaning hole
18. C.H. flow connection
19. C.H. return connection
20. Control door
21. Pull rod of chimney flap
22. Electronic regulator (PROFI version)

## BOILER BODY

The shell is welded from steel of 6 mm thickness. The clothing is welded from steel of 4 mm thickness. Pipes used on the heat exchanger have the wall thickness of 6,3 mm.



## BOILER INSULATION AND JACKETING

Heat exchanger and middle jacketing are insulated by cotton wool. Boiler clothing consists of metal sheets painted by powder paint.

## JET

Is produced from refractory concrete resisting the temperatures, up to 1450°C. Because of heat stress and simplifying the service in the process of exchange, it is divided in two parts.

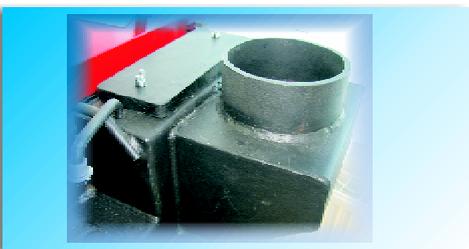


## FUEL CUT-OFF FLAP

It is produced of 6mm-thick steel and in closed position ensures tightness of the upper chamber..

## VENTILATOR

In ATTACKDP boilers there is a flue gas ventilator, that is equipped with engine cover. It works at controllable rotations up to 2760 r.p.m. In the cover of the ventilator there is also an electric supply cable.



## FLUE-GAS EXHAUST PIPE

Flue-gas exhaust pipe consists of a pipe of 6,3 mm thick wall. It is turned up, which makes connecting to the chimney easier.

## ASH PAN

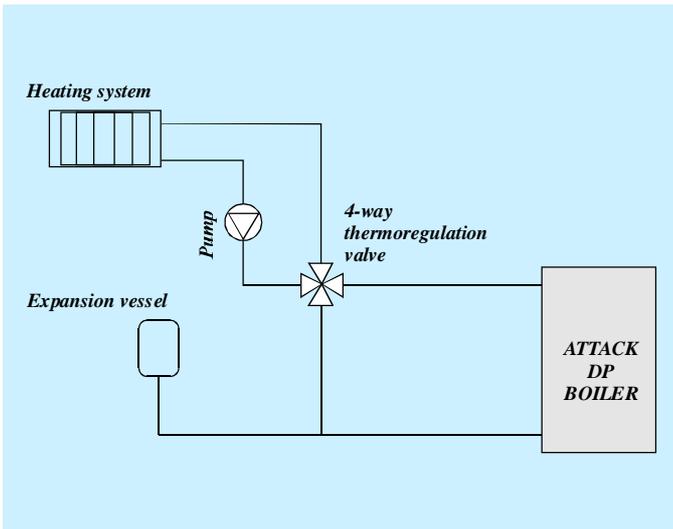
On the steel bottom of the lower chamber there is an ash pan made from refractory concrete, resisting the temperatures up to 1450°C.



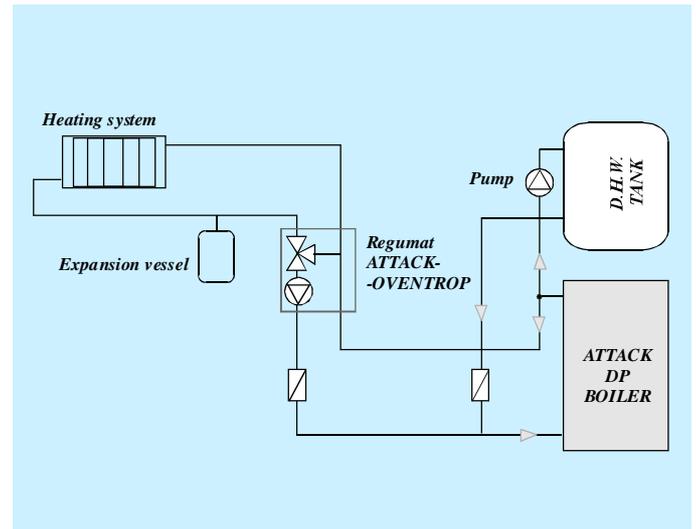
## BOILER DOORS

They are produced from steel of 6 mm thickness and from inside casted with refractory concrete resisting the temperatures up to 1100°C. Both the doors are sealed with heat-proof packing cord.

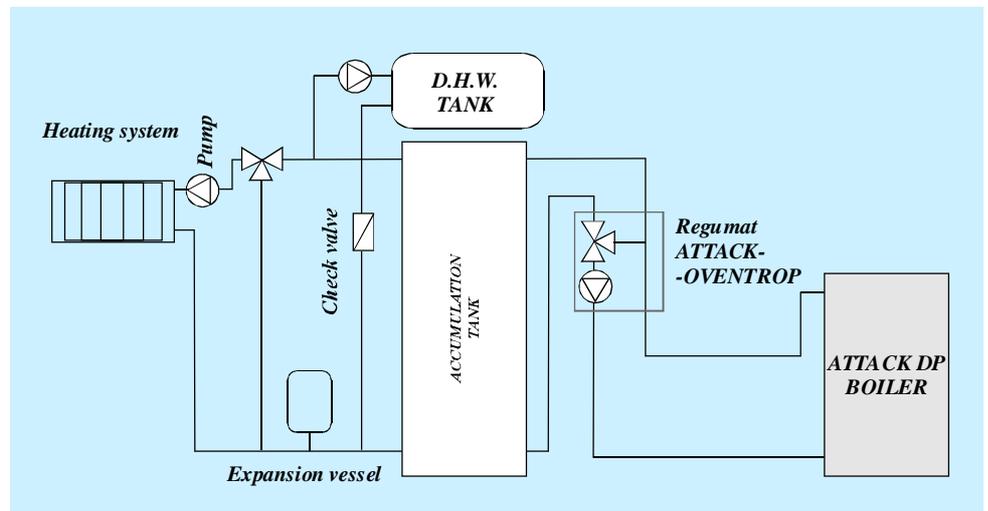
## CHART OF CONNECTION OF ATTACK DP BOILER WITH 4-WAY THERMOREGULATION VALVE



## CHART OF CONNECTION OF ATTACK DP WITH REGUMAT ATTACK-OVENTROP REGULATION SYSTEM



## CHART OF CONNECTION OF ATTACK DP BOILER WITH ACCUMULATION TANK



## WRAPPING

Boiler is attached to a wooden pallet, wrapped in paperboard, double fixed by an adhesive tape.

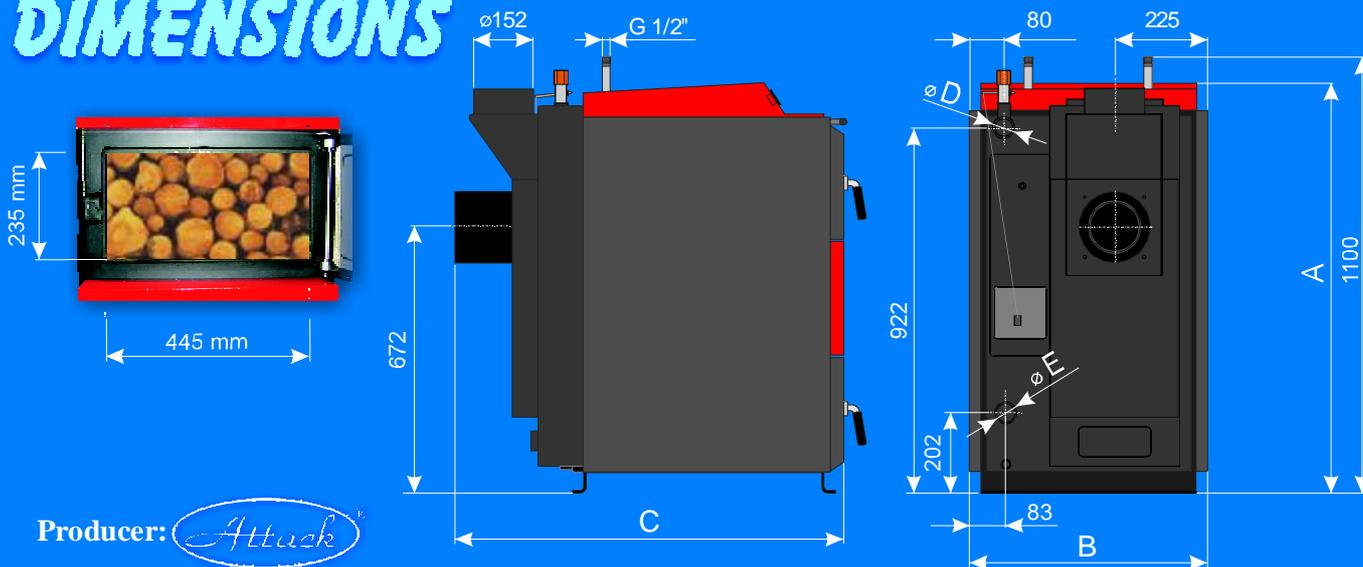


Training of service organizations

# TECHNICAL PARAMETERS

Parameter		DP25	DP35	DP45	DP75
Nominal output (Standard version)	kW	16-25	22-35	29-45	48-75
Output range (Profi version)	kW	10-25	14-35	18-45	30-75
Heating surface	m <sup>2</sup>	2,30	2,70	3,10	5,20
Feed hopper capacity	dm <sup>3</sup>	105	145	185	350
Dimension of feeding opening	mm	235x445	235x445	235x445	294x544
Specified chimney draft	Pa	25	25	25	25
Max. working water overpressure	kPa	250	250	250	250
Boiler weight	kg	350	390	420	650
Diameter of flue connection	mm	152	152	152	219
Boiler height "A"	mm	1100	1100	1100	1350
Boiler width "B"	mm	600	600	600	750
Boiler depth "C"	mm	1150	1250	1350	1600
C.H. flow connection"	mm	G6/4"	G6/4"	G2"	G2"
C.H. return connection	mm	G6/4"	G6/4"	G2"	G2"
Electrical input	W	45	45	55	55
Boiler efficiency	%	86	86	86	86
Boiler class		3			
Temp. of flue gas in nominal output	°C	220	220	220	220
Flow of flue gas in nominal output	kg/s	0,015	0,018	0,021	0,045
Maximum noise level	dB	65	65	65	65
Average fuel consumption	kg <sup>h</sup> <sup>-1</sup>	7,5	10,5	13,5	22,5
Consumption for season		1kW = 1m <sup>3</sup>			
Max. length of logs	mm	550	650	750	1000
Water volume in boiler	l	65	78	92	160
Min. volume of equalisation basin	l	500	625	750	1500
Voltage		230/50 V/Hz			
Range of temperature of heating water		65-90 °C			
Range of room temperature (Profi version)		10-27 °C			
Current carrying capacity of boiler regulator contacts (PROFI version)		1,5A/230V			

## DIMENSIONS



Producer:

*Attack*

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